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10/019,488	04/29/2002	Gabor Benczur-Uermoessy	979/50806	1382

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EXAMINER	
CANTELMO, GREGG	
ART UNIT	**PAPER NUMBER**
1745	

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/019,488	BENCZUR-UERMOESSY, GABOR	
	Examiner	Art Unit	
	Gregg Cantelmo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14,16 and 18-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *16 and 18* is/are allowed.

6)☒ Claim(s) *14 and 19-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the amendment received August 16, 2005:

a. Claims 14, 16 and 18-31 are pending;

b. The claim objections and 112 2nd paragraph rejections set forth in the previous office action have been withdrawn in light of the amendments to the claims;

c. The prior art rejections of record stand in light of the amendment to the claims and upon further review of the teachings of the van Ommering reference of record.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14 and 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,115,630 (van Ommering).

van Ommering discloses a gastight cell in Fig. 2, 4 and 5 comprising: at least one positive nickel oxide electrode 74 (claim 2 and Figs. 4 and 5), at least one hydrogen-storing negative electrode 70 and 78 (col. 5, ll. 43-61 and Figs. 4 and 5) and a hydrophilic separator 76 disposed between the electrodes (paragraph bridging columns 5 and 6) and an alkaline electrolyte (col. 5, line 16)

wherein the negative electrodes are provided with a TEFLON hydrophobic backing surface (34 in Fig. 1 or 80 in Figs. 4 and 5 for transporting gases of the cell atmosphere (col. 5, ll. 43-61 and col. 8, ll. 17-18) and wherein all of the negative electrodes are hydrogen electrodes (col. 5, ll. 3-8 as applied to claim 14). The assembly includes alternating negative and positive electrode layers as shown in Fig. 4 with the stack beginning and ending with negative electrodes. Thus the number of negative electrodes is one more (n+1) than the positive electrodes (n), (Fig. 4 as applied to claim 14). The end plates provide means for handling the cell and thus constitute transport plates.

Vexar screens (not shown) are then placed next to the end plate as a separator element. This screen is approximately 25 mil thick Vexar polypropylene (col. 8, ll. 34-40). These elements are held to be both gas permeable (described as a screen) and hydrophobic (inherent property of polypropylene). Therefore, upon a further review of the teachings of van Ommering, it is held that this reference discloses of the transport elements as defined in claim 14.

The negative electrodes comprise split electrodes between positive electrodes 84, 86 and 88 and unsplit end electrodes adjacent to plates 64 and 66. The split electrodes are separated by the hydrophobic gas-permeable element 80 (Fig. 4 as applied to claim 16).

van Ommering discloses a gastight cell in Fig. 2, 4 and 5 comprising: at least one positive nickel oxide electrode 74 (claim 2 and Figs. 4 and 5), at least one hydrogen-storing negative electrode 70 and 78 (col. 5, ll. 43-61 and Figs. 4

and 5) and a hydrophilic separator 76 disposed between the electrodes (paragraph bridging columns 5 and 6) and an alkaline electrolyte (col. 5, line 16) wherein the negative electrodes are provided with a TEFLON hydrophobic backing surface (34 in Fig. 1 or 80 in Figs. 4 and 5 for transporting gases of the cell atmosphere (col. 5, ll. 43-61 and col. 8, ll. 17-18) and wherein all of the negative electrodes are hydrogen electrodes. None of the electrodes are disclosed as auxiliary electrodes (col. 5, ll. 3-8 as applied to claim 30). The assembly includes alternating negative and positive electrode layers as shown in Fig. 4 with the stack beginning and ending with negative electrodes. Thus the number of negative electrodes is one more (n+1) than the positive electrodes (n), (Fig. 4 as applied to claim 30). Vexar screens (not shown) are then placed next to the end plate as a separator element. This screen is approximately 25 mil thick Vexar polypropylene (col. 8, ll. 34-40). These elements are held to be both gas permeable (described as a screen) and hydrophobic (inherent property of polypropylene). Therefore, upon a further review of the teachings of van Ommering, it is held that this reference discloses of the transport elements as defined in claim 30.

van Ommering discloses a gastight cell in Fig. 2, 4 and 5 comprising: a plurality of electrodes consisting essentially of one or more positive nickel oxide electrode 74 (claim 2 and Figs. 4 and 5), one or more hydrogen-storing negative electrode 70 and 78 (col. 5, ll. 43-61 and Figs. 4 and 5) a hydrophilic separator 76 disposed between the electrodes (paragraph bridging columns 5 and 6) and an alkaline electrolyte (col. 5, line 16) wherein the negative electrodes are

provided with a TEFLON hydrophobic backing surface (34 in Fig. 1 or 80 in Figs. 4 and 5 for transporting gases of the cell atmosphere (col. 5, ll. 43-61 and col. 8, ll. 17-18) and wherein all of the negative electrodes are hydrogen electrodes (col. 5, ll. 3-8 as applied to claim 31). The assembly includes alternating negative and positive electrode layers as shown in Fig. 4 with the stack beginning and ending with negative electrodes. Thus the number of negative electrodes is one more (n+1) than the positive electrodes (n), (Fig. 4 as applied to claim 31). Vexar screens (not shown) are then placed next to the end plate as a separator element. This screen is approximately 25 mil thick Vexar polypropylene (col. 8, ll. 34-40). These elements are held to be both gas permeable (described as a screen) and hydrophobic (inherent property of polypropylene). Therefore, upon a further review of the teachings of van Ommering, it is held that this reference discloses of the transport elements as defined in claim 31.

Response to Arguments

3. Applicant's arguments with respect to claims 14 and 30-31 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Ommering in view of JP 60-250567-A (JP '567).

The teachings of claim 14, with respect to van Ommering, have been discussed above and are incorporated herein.

The differences not yet discussed are of the particulars of the transport element of van Ommering being a nonwoven layer (claim 19), a nonwoven polypropylene layer (claims 20).

As discussed above van Ommering discloses providing a hydrophobic polypropylene spacer 80.

JP '567 discloses that it is desirable to dispose a hydrophobic (water-repellant) nonwoven polypropylene fabric to the negative electrode to provide a layer which is both hydrophobic and gas permeable. This material provides a layer for oxygen gas absorption at the negative electrode (abstract).

The motivation for using a nonwoven polypropylene material as disclosed by JP '567 is that it provides a layer which is both hydrophobic and gas permeable. This material provides a layer for oxygen gas absorption at the negative electrode.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of van Ommering by providing the polypropylene material to be a nonwoven material as taught by JP '567 since it would have provided a layer which is both hydrophobic and gas permeable and provided a layer for oxygen gas absorption at the negative electrode.

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Ommering in view of Sonoda.

The teachings of claim 14, with respect to van Ommering, have been discussed above and are incorporated herein.

The difference between claim 21 and van Ommering is of the positive electrode comprising fibrous-structure frameworks.

The substrate supporting an active material of the positive electrode of these alkaline storage batteries include nickel porous substrates, e.g., a sintered nickel substrate, a foamed nickel substrate, and a fibrous nickel substrate. An increased energy density can be obtained by increasing the porosity of these substrates to which an active material is applied (Sonoda, col. 3, ll. 44-51).

The motivation for providing the fibrous-structure frameworks for the positive electrodes is that it provides a positive electrode arrangement having increased energy density due to the increased porosity of the fibrous substrate.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of van Ommering by using a fibrous-structure frameworks for the positive electrodes since it would have provided a positive electrode arrangement having increased energy density due to the increased porosity of the fibrous substrate.

6. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Ommering in view of JP 07-235304-A (JP '304) or U.S. Patent No. 5,059,496 (Sindorf).

The teachings of claim 14, with respect to van Ommering, have been discussed above and are incorporated herein.

The difference between claim 22 and van Ommering is of the separator material being a hydrophilic nonwoven polypropylene fiber.

JP '304 discloses using hydrophilic nonwoven polyamide or polypropylene fibers as separator materials in batteries (abstract).

Sindorf discloses a similar separator. While many absorbent materials will function adequately as an absorber, the selected material must necessarily be nondegradable in the electrolyte and resistant to oxygen. Additionally, the selected material must have a capillary potential substantially sufficient to hold electrolyte, yet lower than that of the positive electrodes and separator, so that the absorber material does not draw, but instead supplies, electrolyte to the surface 32 of the positive electrode. Absorber 18 may, for example, be a non-woven polypropylene suitably treated to be hydrophilic. A non-woven plastic fiber appears to be a cost-effective choice (col. 10, ll. 53-64).

The motivation for using a hydrophilic nonwoven polyamide or polypropylene fiber mat separator is that it provides a separator having an effective electrical barrier between the opposite electrodes while having sufficient electrolyte absorption and ionic conductivity.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of van Ommering by selecting the separator to be a hydrophilic nonwoven polyamide or polypropylene fiber mat separator since it would have provided a separator having an effective

electrical barrier between the opposite electrodes while having had sufficient electrolyte absorption and ionic conductivity. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

7. Claims 23 and 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Ommering applied to claim 14 above, and further in view of EP 419220 A (EP '220)

The differences not yet discussed are of the particulars of the negative electrode.

With respect to claim 23:

EP '220 discloses of a negative electrode comprising a current collector (i.e. a metallic substrate) on which an active material is disposed. The active material comprising an alloy for hydrogen storage (abstract), an amorphous carbon material such as acetylene black, carbon black or the like (one of ordinary skill in the art recognizing that soot is another amorphous carbon material which would have been suggested by the teaching of EP '220) and a PTFE binder (page 5, line 25 through page 6, line 4 as applied to claim 23).

With respect to claim 25:

EP '220 discloses providing a significant majority of the mixture to the active material alloy having minor constituents of the amorphous carbon and binder (page 5, ll. 35-56). The specification fails to set forth any criticality to the claimed rangers nor does it show unexpected results for such. Thus selecting particular amounts of the hydrogen storage alloy, conductive carbon and binder is a matter of optimizing the electrical and mechanical characteristics of the cell. Increasing the binder amount will increase the adhesion of the electrode material while conversely reducing the amount of active material and/or electrical conductive carbon material. Increasing the amount of active material relative to the carbon material and/or binder material will increase the capacity of the electrode at the expense of reducing the adhesion in the electrode (less binder) and/or decrease the electrical conductance between the current collector and conductive carbon. Increasing the amount of the conductive carbon relative to the active material and/or binder material will increase the electrical conductivity between the active material and the current collector of the electrode at the expense of reducing the adhesion in the electrode (less binder) and/or decreasing the active material and capacity of the electrode.

Thus in short, one of ordinary skill in the art would have found selection of particular weight ratios of the active material, conductive carbon material and binder material to have been a matter of optimization, the results of such optimization providing obvious results relative to the capacity of the electrode, electrical conductivity between the electrode active material and current collector and binding strength in the electrode active material/conductive carbon material/

binder material mixture. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch , 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

With respect to the method of obtaining the active compound and particularly to the limitations drawn to the liquid fraction or a relationship between the mass ratio of the liquid fraction and dry fraction (claims 23, 26, 28 and 29:

The claims are drawn to a product-by-process. In product-by-process claims, it is reasonable not to give weight to the process limitations when there is no clear evidence to unexpected results or criticality of the process being the only process to obtain the claimed product.

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

"The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re

Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113.

Thus the limitations to the liquid fraction have not been accorded weight since they are aspects of the process of obtaining the active material of claim 23 and are not positively present in the final active material product (as applied to claims 23-29 and particularly to the limitations expressed in claims 23, 26, 28 and 29).

8. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Ommering in view of EP '220 as applied to claims 14 and 23 above, and further in view of JP 06-168719-A (JP '719).

The difference not yet discussed is of the dry fraction comprising particles of the storage alloy covered with PTFE fibrils.

JP '719 discloses providing a mixture of the hydrogen storage alloy and PTFE fibers (fibrils) on the surface of the current collector. The mixture of the coating will have both PTFE and the alloy coating one another.

The motivation for this arrangement is that it prevents the exfoliation of the hydrogen occlusion alloy coating from the substrate.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of van Ommering by providing a mixture of the hydrogen storage alloy and PTFE fibers (fibrils) on the surface of the current collector since it would have provided a coating which prevented the exfoliation of the hydrogen occlusion alloy from the substrate.

Allowable Subject Matter

9. Claims 16 and 18 are allowed. Reasons for which can be found in the previous office actions.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (571) 272-1283. The examiner can normally be reached on Monday to Thursday from 9 a.m. to 6 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. FAXES received after 4 p.m. will not be processed until the following business day. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gc

October 29, 2005

GREGG CANTELMO
PRIMARY EXAMINER